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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,251	11/26/2001	Martin Andrew Schlosser	35015/001	8627

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EXAMINER
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ART UNIT	PAPER NUMBER
2855	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/994,251	SCHLOSSER ET AL.	
	Examin r	Art Unit	
	Jewel V Thompson	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 7,9-12, 15, 19-21, 23, 24, 26, 30, 36, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370)

Regarding claims 1 and 26, Tanaka et al teaches the aspects of the claimed invention including a Coriolis flow meter for measuring a process material flow having an ultra high level of purity, the Coriolis flow meter comprising: a base (30); a flow tube apparatus (10); end portions of the flow tube means are coupled (20) to the base (fig. 1A); a driver (71) coupled to the flow tubes apparatus (fig. 1B); pickoff means (72 and 73) coupled signal wise to the flow tube apparatus (col. 5, lines 37-40); meter electronics (col. 5 lines 41-47); a first and second set screw (20). Tanaka et al fails to teach that the flow tube apparatus has high flexibility and also has stiffness substantially lower than flow tube apparatus formed of metal or glass

Van der Pol teaches a Coriolis flow meter comprising a straight Coriolis flow tube (col. 4, line 5) and the tube (4) can consists of metal, or of a metal alloy, or of plastic, in particular of perfluouro-alkoxy-polymer (PFA) (col. 4 lines 30-34). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the PFA material of van der Pol for the tube of Tanaka et al for the purpose of providing a material which is residual, see (MPEP 2144.06)

Regarding claim 2, Tanaka et al fails to teach the flow tube apparatus defines a substantially straight single flow tube. Van der Pol teaches a straight Coriolis measuring tube (col. 4, lines 5). It would have been obvious to one of ordinary skill in the art to use the straight measuring tube of Tanaka et al in the flow meter of van der Pol for the purpose of having low-pressure loss (col. 1, lines 48)

Regarding claims 3 and 26, Tanaka et al fails to teach that the entirety of the wetted flow path of the Coriolis flow meter comprises A PFA substance. Van der Pol teaches a straight Coriolis flow tube (col. 4, line 5) and the tube (4) can consists of metal, or of a metal alloy, or of plastic, in particular of perfluouro-alkoxy-polymer (PFA) (col. 4 lines 30-34)

Regarding claim 4, Tanaka et al teaches more than one flow tube (106, 107)

Regarding claims 7 and 30, Tanaka et al teaches a base (30) having a lower surface and an inner pair of upwardly extending side walls as well as an outer pair of upwardly extending side walls as well as an outer pair of upwardly ending walls are coaxially aligned to receive the flow tube (figs. 1A and 1B)

Regarding claims 9 and 19, Tanaka et al teaches that ends of the flow tube apparatus extend beyond the walls ((20) and fig. 1A)

Regarding claims 10 and 32, Tanaka et al teaches that the base is a solid rectangle element defining a parallelepiped (fig. 1A) and the flow tube is connected to posts affixed between the walls to a top surface of the base (fig. 1A and (20))

Regarding claims 11, 24, Tanaka et al teaches the inlet (20) of the flow tube apparatus receives the process material flow from a supply tube (col. 5, lines 25-27); the return tube ((10), between 70 and 60 in fig. 1A) is coupled to the base (20) and is positioned parallel to the flow tube apparatus (between (72) and (20)) and (fig. 1A) and extends through the wall of the base (fig. 1A at (20)), the return tube is adapted to be connected to an exit tube to extend the process material flow towards a user application (col.5, lines 20-21);

Regarding claim 12, Tanaka et al teaches the flow tube apparatus comprises a single tube (col. 4, lines 3-5). Tanaka fails to explicitly teach that the base has a mass substantially greater than the mass of the flow tube with process material. However, Tanaka does teach that the conduit is made of quartz glass in col. 5, line 24. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have been well aware that in order to contain the conduit, the base would have to have been of greater mass than the conduit for the purpose of stability of the conduit.

Regarding claims 15 and 36, Tanaka et al teaches the driver (71) is affixed to the top of the single flow tube when in use (fig. 1A);

Regarding claims 20, 23, Tanaka et al, a first and second flow tube coupled to the base and positioned parallel to each other, the first and second flow tubes are adapted to be vibrated in phase opposition by the driver (col. 7. lines 56-60); ((72 and 73) and (fig. 1B))

Regarding claim 21, Tanaka et al teaches the driver being affixed to both the first and second flow tube and adapted to vibrate the first and second flow tube in phase opposition (col. 5, lines 37-39);

Regarding claims 42 and 43, Although Tanaka et al fails to explicitly teach that the driver vibrates the flow tube at a resonant frequency of the tube, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the driver vibrating at a resonant frequency or non-resonant frequency since it is known in the art that the Coriolis induced response is inversely proportional to the resonant frequency of the structure for the purpose of measuring the flow of the fluid by measuring its vibration signals.

Claim Rejections - 35 USC § 103

2. Claims 5 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of van der Pol as applied to claim 1 above, and further in view of Kalotay et al (5,349,872).

Regarding claims 5 and 28, Tanaka et al in view of van der Pol neglects to teach a pick-off means which is an electro-magnetic device having a magnet connected

to the flow tube apparatus and further having a coil. Kalotay et al teach right and left sensors which are electromagnetic devices comprising coils (col. 5, lines36-60)). It would have been obvious to one skilled in the art at the time that the invention was made to have used the sensors of Kalotay et al in the flow meter of Tanaka et al for the purpose of processing the signals and generate output information representing the desired characteristics to be measured for the material flowing within flow tubes (col. 5, lines 56-60)

Claim Rejections - 35 USC § 103

3. Claims 6 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370) as applied to claims 1 and 26 above, and further in view of Kalotay (5,400,653)

Regarding claims 6 and 29, Tanaka et al in view of van der Pol fail to teach the pickoff means comprises a light source and an optical detector; the vibrating flow tube apparatus is positioned between the light source and the optical detector to alter the characteristics of the light received by the optical detector from the light source, the optical detector is responsive to the alteration to generate the signals representing the Coriolis deflections.

Kalotay teaches a Coriolis flow meter using optical sensors. The optical sensor (16) comprises a light source ((203) and (fig. 2)) and optical detectors (170L and 170R). The vibrating means (180) is positioned between the light source (203) and the optical detector (170L). It would have been obvious to one of ordinary skill in the art at the time

that the invention was made to have used the optical detector and light source of Kalotay in the flow meter of Tanaka et al for the purpose of measuring the flow of fluid passing through the conduit wherein the phase of the displacement of the flow tube is measured using optical fiber sensors, since the light source received by the optical signal detector is converted to an electrical signal which is processed to generate the mass flow rate (col. 4, lines 67, 68-col. 5, lines1-14).

Claim Rejections - 35 USC § 103

4. Claims 8, 18, 25, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370) as applied to claims 1 and 26 above, and further in view of Takeuchl et al (6,244,110).

Regarding claims 8, 18, 25, 31 and 33, Tanaka et al in view of van der Pol fails to teach that the base is substantially u-shaped. Takeuchl et al teaches a vibration gyro sensor comprising a u-shaped base (4). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the U-shaped base of Takeuchl et al in the flow meter of Tanaka et al for the purpose of stabilizing the vibration in the conduit. Applicant has not given any advantage over using this shape base, therefore any shape would result in the same outcome. (see M.P.E.P. 2144.04)

Claim Rejections - 35 USC § 103

5. Claims 13, 14, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of van de Pol as applied to claim 12 above, and further in view of Drahm et al (6,360,614).

Regarding claims 13, 14, 40 and 41, Tanaka et al fails to teach that the mass of the base is at least 100 and 1000 times greater than the mass of the flow tube. Drahm et al teaches in col. 11, lines 53-55, the mass of each of the isolating bodies (base) is at least five times as large as the mass of the pipe or tube. It would have bee obvious to one having ordinary skill in the art at the time that the invention was made to have to have made the base at 100 or 1000 times the mass of the flow tube for the purpose of isolating and stabilizing the vibration of the tube. Discovering the optimum or workable ranges involves only routine skill in the art. (see M.P.E.P 2144.04)

Claim Rejections - 35 USC § 103

6. Claims 16, 17, 34, 35, 37, 38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370) as applied to claims 12 and 26 above, and further in view of Van Cleve (6,363,794)

Regarding claims 16, 17, 34, 35, 37, 38 and 43, Tanaka et al in view of van der Pol fails to teach a dynamic balancer means is coupled to the base proximate the nodes to maintain the nodes at a reduced level of vibration; the dynamic balancer means is an active dynamic balancer controlled by the exchange of signals with the meter electronics

Van Cleve teaches a Coriolis flow meter comprising a balance bar which functions as a dynamic balancer (col. 14, lines 43-46) and meter electronics (921), which controls the exchange of signals. The resonator balance bar is coupled to the balance bar (base) (col. 14, lines 64-66). The resonator bar would allow the driver to vibrate at a non-resonant frequency allowing the vibration to balance out. It would have been obvious to one skilled in the art at the time that the invention was made to have used the balance bar and meter electronics of Van Cleve in the flow meter of Tanaka for the purpose of canceling or minimizing any rotation of the balance bar due to the Coriolis signals applied by the flow tube by brace bar to balance bar resonator and using the meter electronics to determine the flow of materials using the signals.

Claim Rejections - 35 USC § 103

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370) as applied to claim 20 above, and further in view of Lew (5,078,014)

Regarding claim 22, Tanaka et al in view of van der Pol fails to teach that the first and second flow tubes are connected in series with respect to the material flow. Lew teaches a flow meter based of the Coriolis affect comprising two generally straight section (7 and 8) of the conduit, which are in series to one another (fig. 1). It would have been obvious to one skilled in the art at the time that the invention was made to have used the conduits connected in series of Lew in the flow meter of Tanaka et al for the purpose for measuring the vibrations relative to the two conduits connected in series. (see M.P.E.P. 2144.04)

Claim Rejections - 35 USC § 103

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (5,157,975) in view of van der Pol (6,336,370) as applied to claims 1 and 26 above, and further in view of Lanham et al (6,450,042)

Tanaka et al in view of van der Pol teach the aspects of the claimed invention **except** the single flow tube and the return tube are glued to the base

Lanaham et al teach a Coriolis flow meter having tubes that may be molded separately and adhesive bonded to the sockets of the manifolds. It would have been obvious to one skilled in the art at the time that the invention was made to have used the same procedure as that of Lanham et al of gluing the tubes to the manifold in the flow meter of Tanaka et al for the purpose of securing without any hardware.

Claim Rejections - 35 USC § 103

9. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of van der Pol as applied to claim 26 above, and further in view of Alesz et al (5,627,326).

Regarding claim 39, Tanaka et al in view of van der Pol fails to teach that the first and second flow tubes have an irregular shape. Alesz et al teaches a Coriolis type apparatus comprising a pair of irregular "B-shaped" conduits (col. 3, line 66-67). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have placed the pair of conduits of Alesz et al in the flow meter of Tanaka et al for the purpose of passing flow from an inlet to an outlet. (see M.P.E.P. 2144.04)

Response to Arguments

10. Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection based on amended claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

4,729,243 Freidland et al teaches a mass flow measuring instrument having irregular shaped conduit

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jewel V Thompson whose telephone number is 703-308-6726. The examiner can normally be reached on 7-4:30, off alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ben Fuller can be reached on 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1134.

Jewel V. Thompson

jvt
April 10, 2003

EDWARD LEFKOWITZ
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